

DAFTAR ISI

PERNYATAAN.....	Error! Bookmark not defined.
UCAPAN TERIMA KASIH.....	Error! Bookmark not defined.
ABSTRAK	Error! Bookmark not defined.
DAFTAR ISI.....	vi
DAFTAR TABEL.....	viii
DAFTAR GAMBAR	x
BAB I PENDAHULUAN	Error! Bookmark not defined.
1.1. Latar Belakang Penelitian	Error! Bookmark not defined.
1.2. Rumusan Masalah Penelitian	Error! Bookmark not defined.
1.3. Tujuan Penelitian	Error! Bookmark not defined.
1.5. Manfaat Penelitian	Error! Bookmark not defined.
1.6. Struktur Organisasi Skripsi	Error! Bookmark not defined.
BAB II LANDASAN TEORI	Error! Bookmark not defined.
2.1. Harmonisa	Error! Bookmark not defined.
2.2. Beban Linier dan Non-Linier.....	Error! Bookmark not defined.
2.3. Pengaruh Harmonisa	Error! Bookmark not defined.
2.4. Spektrum Harmonisa	Error! Bookmark not defined.
2.5. Tegangan dibandingkan Distorsi Arus.....	Error! Bookmark not defined.
2.6. IHD (<i>Individual Harmonic Distortion</i>)....	Error! Bookmark not defined.
2.7. THD (<i>Total Harmonic Distortion</i>)	Error! Bookmark not defined.
2.8. Faktor Daya.....	Error! Bookmark not defined.
2.9. Lampu LED (Light Emitting Diode)	Error! Bookmark not defined.
2.10. Filter Harmonisa	Error! Bookmark not defined.
2.10.1. Filter Pasif	Error! Bookmark not defined.
2.10.2. Filter Aktif.....	Error! Bookmark not defined.
2.8. <i>Single Tuned Filter</i>	Error! Bookmark not defined.
2.9. Perancangan Single Tuned Filter	Error! Bookmark not defined.
2.10. Cara Kerja Filter <i>Single tuned</i>	Error! Bookmark not defined.
BAB III METODE PENELITIAN.....	Error! Bookmark not defined.

3.1.	Prosedur Penelitian	Error! Bookmark not defined.
3.2.	Objek Penelitian.....	Error! Bookmark not defined.
3.3.	Peralatan Pengukuran.....	Error! Bookmark not defined.
3.4.	Prosedur Pengukuran Harmonisa.....	Error! Bookmark not defined.
3.5.	Perancangan Desain Filter Pasif Tipe <i>Single Tuned Filter</i>	Error! Bookmark not defined.
BAB IV PEMBAHASAN.....		Error! Bookmark not defined.
4.1.	Hasil Pengukuran Harmonisa	Error! Bookmark not defined.
4.1.1.	Data Pengukuran Harmonisa Setiap Lantai Pada SDP	Error! Bookmark not defined.
4.2.	Pengaruh Hamonisa Terhadap Rugi – Rugi Daya .	Error! Bookmark not defined.
4.3.	Perbandingan Antara TL LED dan TL-D	Error! Bookmark not defined.
4.3.1.	Perbandingan Biaya kWh Listrik	Error! Bookmark not defined.
4.3.2.	Perbandingan Investasi Penggunaan Tipe Lampu	Error! Bookmark not defined.
4.4.	Perancangan Desain <i>Single Tuned Filter</i> Menggunakan ETAP Power Station 12.6	Error! Bookmark not defined.
4.5.	Pemasangan single Tuned Filter Untuk Masing – Masing Beban...	Error! Bookmark not defined.
BAB V KESIMPULAN DAN REKOMENDASI.		Error! Bookmark not defined.
DAFTAR PUSTAKA		Error! Bookmark not defined.
LAMPIRAN.....		Error! Bookmark not defined.

DAFTAR TABEL

Tabel 2. 1 Kerugian yang diakibatkan oleh harmonisa pada berbagai peralatan (Ismoyo, Syafei, Mayasari, & Ola, n.d.)	Error! Bookmark not defined.
Tabel 2. 2 Batasan distorsi tegangan (IEEE Std 519-2014, 2014)	Error! Bookmark not defined.
Tabel 2. 3 Batasan distorsi arus untuk sistem pada 120V sampai 69 kV (IEEE Std 519-2014, 2014)	Error! Bookmark not defined.
Tabel 3. 1 Jumlah lampu LED pada gedung FPEB	Error! Bookmark not defined.
Tabel 3. 2 Pengukuran lampu LED	Error! Bookmark not defined.
Tabel 3. 3 Pengukuran harmonisa arus lampu LED	Error! Bookmark not defined.
Tabel 3. 4 Pengukuran harmonisa tegangan lampu LED ..	Error! Bookmark not defined.
Tabel 3. 5 Pengukuran Pada MDP Gedung FPEB Baru....	Error! Bookmark not defined.
Tabel 3. 6 Pengukuran Harmonisa Arus	Error! Bookmark not defined.
Tabel 3. 7 Pengukuran Hamonisa Tegangan	Error! Bookmark not defined.
Tabel 3. 8 Spesifikasi Model Single Tuned Filter Hasil Perancangan	Error! Bookmark not defined.
Tabel 4. 1 Pengukuran lampu LED	Error! Bookmark not defined.
Tabel 4. 2 Pengukuran harmonisa arus lampu LED	Error! Bookmark not defined.
Tabel 4. 3 Pengukuran harmonisa tegangan lampu LED ..	Error! Bookmark not defined.
Tabel 4. 4 Pengukuran lampu LED	Error! Bookmark not defined.
Tabel 4. 5 Pengukuran harmonisa arus lampu LED	Error! Bookmark not defined.
Tabel 4. 6 Pengukuran harmonisa tegangan lampu LED ..	Error! Bookmark not defined.
Tabel 4. 7 Pengukuran lampu LED	Error! Bookmark not defined.
Tabel 4. 8 Pengukuran harmonisa arus lampu LED	Error! Bookmark not defined.
Tabel 4. 9 Pengukuran harmonisa tegangan lampu LED ..	Error! Bookmark not defined.
Tabel 4. 10 Pengukuran lampu LED	Error! Bookmark not defined.
Tabel 4. 11 Pengukuran harmonisa arus lampu LED	Error! Bookmark not defined.
Tabel 4. 12 Pengukuran harmonisa tegangan lampu LED	Error! Bookmark not defined.

Tabel 4. 13 Pengukuran lampu LED	Error! Bookmark not defined.
Tabel 4. 14 Pengukuran harmonisa arus lampu LED	Error! Bookmark not defined.
Tabel 4. 15 Pengukuran harmonisa tegangan lampu LED	Error! Bookmark not defined.
Tabel 4. 16 Pengukuran lampu LED	Error! Bookmark not defined.
Tabel 4. 17 Pengukuran harmonisa arus lampu LED	Error! Bookmark not defined.
Tabel 4. 18 Pengukuran harmonisa tegangan lampu LED	Error! Bookmark not defined.
Tabel 4. 19 Data THDi dan THDv Pada Instalasi Lampu LED Gedung FPEB Baru.....	Error! Bookmark not defined.
Tabel 4. 20 Daya Total Sebelum Terkena Harmonisa.....	Error! Bookmark not defined.
Tabel 4. 21 Daya Total Setelah Terkena Harmonisa	Error! Bookmark not defined.
Tabel 4. 22 Jumlah Lampu Pada Gedung FPEB Baru.....	Error! Bookmark not defined.
Tabel 4. 23 Daya Total Penggunaan Lampu TL-D dan XL-LED	Error! Bookmark not defined.
Tabel 4. 24 Biaya kWh Lampu LED Pada Gedung FPEB Baru	Error! Bookmark not defined.
Tabel 4. 25 Biaya kWh Lampu TL-D dan XL LED Pada Gedung FPEB Baru	Error! Bookmark not defined.
Tabel 4. 26 Harga Lampu	Error! Bookmark not defined.
Tabel 4. 27 Biaya Lampu.....	Error! Bookmark not defined.
Tabel 4. 28 Biaya Penggunaan Lampu	Error! Bookmark not defined.
Tabel 4. 29 Perbandingan Biaya Investasi Pemakaian Daya dan Penggantian Lampu (<i>lifetime</i>)	Error! Bookmark not defined.
Tabel 4. 30 Data Harmonisa Arus Hasil Pemasangan Fiter Orde ke 3.....	Error! Bookmark not defined.
Tabel 4. 31 Data Harmonisa Arus Hasil Pemasangan Fiter Orde ke 3 dan 5	Error! Bookmark not defined.
Tabel 4. 32 Data Harmonisa Arus Hasil Pemasangan Fiter Orde ke 3, 5, dan 7	Error! Bookmark not defined.
Tabel 4. 33 Perbandingan daya sebelum dan setelah pemasangan filter	Error! Bookmark not defined.

DAFTAR GAMBAR

- Gambar 2. 1 Gelombang yang terkena harmonisa (Ewald & Mohammad, 2008)
.....**Error! Bookmark not defined.**
- Gambar 2. 2 Bentuk gelombang yang terdistorsi (Dugan et al., 2002)..... **Error! Bookmark not defined.**
- Gambar 2. 3 Gelombang tegangan dan arus beban linier **Error! Bookmark not defined.**
- Gambar 2. 4 Gelombang tegangan dan arus beban non-linier**Error! Bookmark not defined.**
- Gambar 2. 5 Spektrum harmonisa (J.C.Das, 2015)**Error! Bookmark not defined.**
- Gambar 2. 6 Arus harmonisa yang mengalir melalui hasil sistem impedansi dalam tegangan harmonisa pada beban (Dugan et al., 2002) **Error! Bookmark not defined.**
- Gambar 2. 7 Simbol LED.....**Error! Bookmark not defined.**
- Gambar 2. 8 Diagram blok dari ballast elektronik LED (Uddin et al., 2012) **Error! Bookmark not defined.**
- Gambar 2. 9 Filter pasif (Rinas, 2011).....**Error! Bookmark not defined.**
- Gambar 2. 10 Konfigurasi filter pasif (Dugan et al., 2002) . **Error! Bookmark not defined.**
- Gambar 2. 11 Rangkaian filter pasif seri**Error! Bookmark not defined.**
- Gambar 2. 12 Rangkaian Filter pasif shunt.....**Error! Bookmark not defined.**
- Gambar 2. 13 Model sistem dengan beban non linier..... **Error! Bookmark not defined.**
- Gambar 2. 14 Model sistem saat frekuensi resonansi **Error! Bookmark not defined.**
- Gambar 3. 1 Diagram Alir Penelitian**Error! Bookmark not defined.**
- Gambar 3. 2 Lampu Bohlam Philips LED 14w**Error! Bookmark not defined.**
- Gambar 3. 3 Lampu ESSENTIAL LEDtube 1200mm 20W865 T8 AP I..... **Error! Bookmark not defined.**
- Gambar 3. 4 (a) HIOKI 3197 Power Quality Analyser dan (b) Clamp On Sensor 9660**Error! Bookmark not defined.**
- Gambar 3. 5 HIOKI 3286 – 20.....**Error! Bookmark not defined.**
- Gambar 3. 6 Rangkaian pengukuran harmonisa pada instalasi lampu LED.. **Error! Bookmark not defined.**
- Gambar 3. 7 Proses pengukuran harmonisa pada SDP **Error! Bookmark not defined.**
- Gambar 3. 8 Rangkaian pengukuran harmonisa pada MDP **Error! Bookmark not defined.**
- Gambar 3. 9 Proses pengukuran harmonisa pada MDP..... **Error! Bookmark not defined.**
- Gambar 3. 10 Spektrum THDi pada MDP.....**Error! Bookmark not defined.**

Gambar 3. 11 Spektrum THDv pada MDP	Error! Bookmark not defined.
Gambar 4. 1 Spektrum THDi pada Lantai 1	Error! Bookmark not defined.
Gambar 4. 2 Spektrum THDv pada Lantai 1	Error! Bookmark not defined.
Gambar 4. 3 Spektrum THDi pada Lantai 2	Error! Bookmark not defined.
Gambar 4. 4 Spektrum THDv pada Lantai 2	Error! Bookmark not defined.
Gambar 4. 5 Spektrum THDi pada Lantai 3	Error! Bookmark not defined.
Gambar 4. 6 Spektrum THDv pada Lantai 3	Error! Bookmark not defined.
Gambar 4. 7 Spektrum THDi pada Lantai 4	Error! Bookmark not defined.
Gambar 4. 8 Spektrum THDv pada Lantai 4	Error! Bookmark not defined.
Gambar 4. 9 Spektrum THDi pada Lantai 5	Error! Bookmark not defined.
Gambar 4. 10 Spektrum THDv pada Lantai 5	Error! Bookmark not defined.
Gambar 4. 11 Spektrum THDi pada Lantai 6	Error! Bookmark not defined.
Gambar 4. 12 Spektrum THDv pada Lantai 6	Error! Bookmark not defined.
Gambar 4. 13 Grafik perbandingan pemakaian daya sebelum dan sesudah terharmonisa	Error! Bookmark not defined.
Gambar 4. 14 Grafik perbandingan pemakaian daya lampu LED dan lampu TL-D dan XL LED	Error! Bookmark not defined.
Gambar 4. 15 Perbandingan biaya pemakaian daya lampu LED dan lampu TL-D dan XL LED	Error! Bookmark not defined.
Gambar 4. 16 Perbandinga penggunaan TL LED degan TL-D ..	Error! Bookmark not defined.
Gambar 4. 17 Rangkaian pembebanan Gedung FPEB Baru pada simulasi ETAP	Error! Bookmark not defined.
Gambar 4. 18 Parameter spesifikasi filter pada ETAP	Error! Bookmark not defined.
Gambar 4. 19 Pemasangan single tuned filter orde 3.....	Error! Bookmark not defined.
Gambar 4. 20 Grafik Spektrum (THDi) % Setelah di Filter Orde 3	Error! Bookmark not defined.
Gambar 4. 21 Pemasangan single tuned filter orde 3 dan 5.	Error! Bookmark not defined.
Gambar 4. 22 Spektrum (THDi) % Setelah di Filter Orde 3 dan 5.....	Error! Bookmark not defined.
Gambar 4. 23 Pemasangan single tuned filter orde 3, 5, dan 7...	Error! Bookmark not defined.
Gambar 4. 24 Spektrum (THDi) % Setelah di Filter Orde 3, 5, dan 7.....	Error! Bookmark not defined.
Gambar 4. 25 Perbandingan Daya Sebelum dan Setelah di Filter	Error! Bookmark not defined.